

CHICAGO FORECAST DISTRICT.

The month was an unusually stormy one for the season on the upper lakes, and it was marked by a larger number of marine disasters than has occurred during any previous month for many years.

During the storm of the 7-8th several vessels were wrecked at the foot of Lake Huron. The disasters were due, however, rather to dense smoke than to high winds, and several shipmasters mistook lights on the shore about three miles from the end of the lake for lights at the entrance of the St. Clair River, and went ashore. Brisk and possibly high northerly winds were forecast for Lake Huron the morning of the 6th, and on the morning of the 7th the forecast was for brisk to high northerly winds. High winds prevailed on the upper lakes from the 15th to 17th, impeding navigation and causing some wrecks. The approach of this storm was announced in the forecasts and by the display of storm warnings. High and dangerous winds occurred from the 21st to 25th, but as vessel men sought shelter as soon as the warnings were hoisted no wrecks of consequence occurred.

General warnings were issued well in advance of the frosts of the middle part of the month.—*H. J. Coz, Professor.*

NEW ORLEANS FORECAST DISTRICT.

A disturbance of tropical origin for which storm warnings were ordered, reached the middle Gulf coast on the 17th, attended by high winds at the mouth of the Mississippi River and at points along the Mississippi coast. Timely frost warnings were issued for Arkansas on the 18th, and on the morning of the 19th unseasonably cold weather prevailed over Arkansas and Louisiana, the temperature at New Orleans being the lowest ever recorded in September.—*I. M. Cline, Forecast Official.*

DENVER FORECAST DISTRICT.

Apart from the frosts that visited the agricultural sections of this district, and which were accurately forecast, the weather conditions were such as to require no special warnings.—*F. H. Brandenburg, Forecast Official.*

SAN FRANCISCO FORECAST DISTRICT.

On the 20th conditions were such that warnings were distributed to fruit growers to be prepared to cover promptly. On the morning of the 21st rain warnings were issued to raisin makers and prune growers, also to all railroad station agents where grain was likely to be held in sacks and exposed to the weather. These warnings were of the greatest benefit and where losses occurred they were due to the inability of those warned to remove their goods.—*Alexander G. McAdie, Professor.*

PORTLAND, OREG., FORECAST DISTRICT.

On the evening of the 20th conditions indicated high winds at sea, and warnings were issued to Washington and Oregon ports. The storm proved to be the first one of this season of a type peculiar to the winter months, and was attended by high winds and rain throughout the district. The frosts of the month were forecast sufficiently far in advance to allow a wide distribution of the warnings.—*Edw. A. Beals, Forecast Official.*

HAVANA, CUBA, FORECAST DISTRICT.

The only severe storm of the month was first indicated to the east-southeast of St. Kitts on the afternoon of the 10th. During the succeeding five days this disturbance moved slowly westward over the Caribbean Sea, its approach being heralded by full and timely advices and warnings. Reports received from points in the southern districts of the islands of the Greater Antilles and from vessels that entered its area show that the storm possessed considerable strength, which was manifested largely as heavy rain that flooded rivers and smaller streams.—*Wm. B. Stockman, Forecast Official.*

AREAS OF HIGH AND LOW PRESSURE.

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
High areas.							<i>Miles.</i>	<i>Days.</i>	<i>Miles.</i>	<i>Miles.</i>
I.....	5, a.m.	54	121	9, p.m.	38	78	2,575	4.5	572	22.8
II.....	15, p.m.	48	125	21, a.m.	47	58	4,470	5.5	812	33.9
III.....	15, a.m.	54	121	22, a.m.	45	67	3,545	4.0	885	36.8
IV.....	23, a.m.	53	108	27, a.m.	41	70	2,050	4.0	512	21.3
Sums.....							12,640	18.0	2,782	115.8
Mean of 4 paths.....							3,160		696	29.0
Mean of 18.0 days.....									702	29.2
Low areas.										
I.....	1, a.m.	44	116	6, a.m.	47	92	2,150	5.0	430	17.9
II.....	8, p.m.	41	97	11, p.m.	48	69	1,600	3.0	533	23.2
III.....	9, p.m.	39	108	14, a.m.	47	53	3,250	4.5	722	30.0
IV.....	11, a.m.	16	63	18, p.m.	35	76	3,000	7.5	400	16.7
V.....	12, a.m.	48	125	17, a.m.	47	58	3,575	5.0	715	29.8
VI.....	20, a.m.	51	120	24, a.m.	47	53	3,500	4.0	875	36.4
VII.....	22, p.m.	40	122	25, a.m.	50	100	1,700	2.5	680	26.3
VIII.....	27, a.m.	30	83	30, p.m.	46	60	2,300	3.5	622	26.2
Sums.....							20,975	35.0	4,964	207.5
Mean of 8 paths.....							2,622		623	26.9
Mean of 35.0 days.....									599	24.8

For graphic presentation of these highs and lows see Charts I and II.—*Geo. E. Hunt, Chief Clerk Forecast Division.*

RIVERS AND FLOODS.

The usual seasonal low water stages prevailed in the upper Mississippi River during the month of September, with extreme fluctuations of less than one foot over that portion north of St. Louis, Mo. In the lower river the average stages were somewhat higher than during August, 1901, the influence of the rise of that month not having entirely disappeared. At St. Paul, Minn., navigation was suspended for the season on the last day of the month.

The average stages of the Missouri River were about one foot lower than during the preceding month. At Sioux City, Iowa, on the 12th, the river reached its highest recorded September stage, 9.1 feet, one of the consequences of the heavy storm of the previous day.

Nothing of interest was reported from other rivers except those of the South Atlantic States, where the heavy rains of the 16th and 17th caused a general and decided rise. The Cape Fear River at Fayetteville N. C., rose 39.6 feet from the 16th to the 20th, passing the danger line of 38 feet on the 19th, and reaching a crest stage of 43.6 feet on the morning of the 20th.

The flood stages of the rivers of South Carolina were well forecast, and the following report thereon was made by Mr. L. N.

Jesunofsky, official in charge of the United States Weather Bureau office at Charleston, S. C.

The streams in South Carolina were nearly bank full at the beginning of the month. Tides were exceedingly short, about half ebb only. This, coupled with the high water, resulting from the prolonged period of northeasterly winds, produced abnormal tides of 1.5 to 2.5 feet along the portions of fresh water streams within the tidal sections of the coast. The tides seriously retarded the outflow of the freshet waters on the lower Santee River and in Winyah Bay, endangering the rice plantations of those localities. The conditions prevailing during the latter half of August continued throughout this month, and in consequence the rice planters could not drain their lands for harvesting. Much rice was lost thereby.

Heavy rainfall over the upper catchment basins during the 16th and 17th caused a rapid run-off, and raised the Wateree at Camden, S. C., 21.9 feet during the 18th and 19th; the danger line, 24 feet, was reached during the afternoon of the 18th. The stream began to recede rapidly about 10 a. m. of the 20th, at which time it fell below the danger point.

The Pedee, at Cheraw, S. C., rose 24 feet during the 18th and 19th to a maximum stage of 30.3 feet, passing the danger line, 27.0 feet, at about 5 a. m. of the 19th. There was a slow decline during the night of the 19th. It began to recede rapidly during the night of the 20th, passing the danger point, on its downward course at noon of the 20th.

There was a rise of 17.7 feet in the Congaree, at Columbia, S. C., during the 18th and 19th. It reached the danger point, 15.0 feet, at 10 a. m. of the 18th, and had fallen below the danger line by 1 a. m. of the 21st.

The lower Santee, at St. Stephens, S. C., was 0.1 to 0.5 of a foot above the danger line (12 feet) on the 6th, 7th, 26th, and 27th. Its fluctuations were exceedingly small during the entire month, owing to the high tides noted above.

The lower Pedee, at Smiths Mills, S. C., remained at high stages throughout the month. It rose to, and slightly above, the danger point on the 27th and 28th. Its seaward course during the last half of the month was very much retarded by the frequent high tides, which banked up the earlier freshet waters within Winyah Bay, thus causing a slow decline.

The rivers of eastern and southern Georgia were also generally above the danger lines, but, as far as has been ascertained, no considerable damage was done except along the Ocmulgee and lower Flint rivers. Timely warning was given of the approach of the flood stages in the former river.

The highest and lowest water, mean stage, and monthly range at 134 river stations are given in Table VII. Hydrographs for typical points on seven principal rivers are shown on Chart V. The stations selected for charting are: Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport on the Red.—*H. C. Frankenfield, Forecast Official.*

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following summaries relating to the general weather and crop conditions are furnished by the directors of the respective sections of the Climate and Crop Service of the Weather Bureau.

[Temperature is expressed in degrees Fahrenheit and precipitation in inches and hundredths.]

Alabama.—The mean temperature was 72.1°, or 2.7° below normal; the highest was 95°, at Bermuda, Tuskegee, and Wetumpka on the 9th and at Livingston on the 15th, and the lowest, 39°, at Riverton on the 19th. The average precipitation was 4.19, or 1.48 above normal; the greatest monthly amount, 11.45, occurred at Eufaula, and the least, 1.10, at Livingston.

Rather cool and unfavorable, retarding opening of cotton, with light frost in northern counties from 19th to 22d; excessive and damaging rains in southeast counties.—*F. P. Chaffee.*

Arizona.—The mean temperature was 75.4°, or 0.5° below normal; the highest was 114°, at Mohawk Summit on the 2d, and the lowest, 24°, at Flagstaff on the 25th. The average precipitation was 0.48, or 0.55 below normal; the greatest monthly amount, 3.90, occurred at Duncan, while none fell at a great number of stations.

Conditions were generally favorable for plant development during the first half, but a diminished water supply for irrigation in the lower agricultural valleys and cold weather in the northern tier of counties retarded further growth during the latter part of the month. Farming operations were backward, as on account of the dryness of the soil, but little fall plowing and seeding could be done.—*Wm. G. Burns.*

Arkansas.—The mean temperature was 72.6°, or 1.2° below normal; the highest was 101°, at Pine Bluff on the 9th and 10th and at Rison on the 8th and 10th, and the lowest, 32°, at Pond on the 18th. The average precipitation was 3.08, or 0.22 below normal; the greatest monthly amount, 8.87, occurred at Marvell, and the least, 0.17, at Hardy.

Hot days and comparatively cool nights, with very unevenly distributed rainfall characterized the month. Light frost occurred in various localities on the 18th and 19th, but the damage was inappreciable. Cotton was opening fast, with picking in rapid progress; indications point to a very light yield. Corn was all matured, and about all cut and housed; the yield is very unsatisfactory. Apples were generally a failure. Irish potatoes, peas, and turnips were not doing well.—*Edward B. Richards.*

California.—The mean temperature was 66.0°, or 2.3° below normal; the highest was 114°, at Volcano on the 17th, and the lowest, 15°, at Bodie on the 24th. The average precipitation was 0.94, or 0.05 above normal; the greatest monthly amount, 6.28, occurred at Crescent City, while none fell at 28 stations.

Conditions were generally favorable for crops during the month, although the temperature was below normal most of the time. Rain was general throughout the State on the 23d and 24th, but as warnings had been given there was very little injury to raisins and drying fruits; grapes on the vines, grain in sacks, and unbaled hay were slightly damaged.—*Alexander G. McAfee.*

Colorado.—The mean temperature was 58.8°, or about normal; the highest was 96°, at Lamar on the 9th and at Las Animas on the 26th, and the lowest, 9°, at Wagon Wheel Gap on the 25th. The average precipitation was 0.65, or 0.30 below normal; the greatest monthly amount, 2.86, occurred at Wallet, while none fell at Montrose and only a trace at Glenwood Springs, Grand Junction, Tennessee Pass, and Las Animas.

Weather favorable to belated crops, harvesting, and thrashing, but soil too dry for plowing, seeding, and the germination of winter grain. The showers were generally confined to the first decade and were very beneficial to ranges, potatoes, and the third growth of alfalfa, and the last-named crop was heavier than the conditions during August gave reason to expect. A good acreage of corn had been cut for fodder but the remainder matured nicely and a fair crop was gathered. Potatoes suffered no material damage by frosts and a heavy yield is indicated. At the close of the month ranges as a whole were in satisfactory condition. A rather destructive hailstorm occurred in Weld County on the 6th; wheat in shock, potatoes, sugar beets, and late alfalfa were injured. High winds were general on the 24th and caused considerable damage to hay in stack and windrow, besides blowing off many late apples and breaking trees in localities.—*F. H. Brandenburg.*

Cuba.—The mean temperature was 80.3°; the highest was 100°, at Nuevitas on the 1st, and the lowest, 60°, at Santa Clara on several days. The average precipitation was 10.92; the greatest monthly amount, 21.15 occurred at Plantation Providencia (Guines), and the least, 3.20, at Nuevitas.

Very uniform and seasonable temperature. Rains were frequent and very heavy in most sections, on account of which all field work was very much retarded, lowland crops damaged in many localities, and numerous tobacco seed beds ruined. Sugar cane on high ground, however, grew luxuriantly and at the close of the month its condition was highly satisfactory. Minor products are very scarce in some districts, but over the greater portion of the island they are fairly good and abundant.—*W. B. Stockman.*

Florida.—The mean temperature was 79.1°, or 0.2° above normal; the highest was 98°, at Eustis, Fort Meade, and Ocala on the 13th and at McAlpin on the 14th, and the lowest, 54°, at Wausau on the 20th and at Tallahassee on the 27th. The average precipitation was 8.38, or 1.04 above normal; the greatest monthly amount, 17.55, occurred at New Smyrna, and the least, 3.37, at Lake Butler.

During the first week rainfall was excessive over a large portion of the State, interfering somewhat with the harvesting of corn. Cotton made no improvement, and there was considerable complaint of rust and shedding. Precipitation was less damaging during the second week, and there were some sections where showers would have benefited vegetables. During the third week rain retarded cotton picking, but fair progress was made with fall plowing. The closing week was decidedly damaging in northern and central districts by reason of heavy rains.—*A. J. Mitchell.*

Georgia.—The mean temperature was 73.1°, or 2.0° below normal; the highest was 101°, at Fleming on the 14th, and the lowest, 41°, at